



**United States
Department of
Agriculture**

**Agricultural
Marketing
Service**

**Fruit and
Vegetable
Division**

**Processed
Products
Branch**

United States Standards for Grades of Canned Whole Kernel Corn

Effective date July 1, 1957

This is the fourth issue, as amended, of the United States Standard for Grades of Canned Whole Kernel (or whole Grain) Corn published in the Federal Register of May 22, 1957, (22 FR 3535) to become effective July 1, 1957. This issue supersedes the fourth issue, which has been in effect since July 30, 1952.

Voluntary U.S. grade standards are issued under the authority of the Agricultural Marketing Act of 1946, which provides for the development of official U.S. grades to designate different levels of quality. These grade standards are available for use by producers, suppliers, buyers, and consumers. As in the case of other standards for grades of processed fruits and vegetables, these standards are designed to facilitate orderly marketing by providing a convenient basis for buying and selling, for establishing quality control programs, and for determining loan values.

The standards also serve as a basis for the inspection and grading of commodities by the Federal inspection service, the only activity authorized to approve the designation of U.S. grades as referenced in the standards, as provided under the Agricultural Marketing Act of 1946. This service, available as on-line (in-plant) or lot inspection and grading of all processed fruit and vegetable products, is offered to interested parties, upon application, on a fee-for-service basis. The verification of some specific recommendations, requirements, or tolerances contained in the standards can be accomplished only by the use of on-line inspection procedures. In all instances, a grade can be assigned based on final product factors or characteristics.

In addition to the U.S. grade standards, grading manuals or instruction for inspection of several processed fruits and vegetables are available upon request for a nominal fee. These manuals or instructions contain detailed interpretations of the grade standards and provide step-by-step procedures for grading the product.

Grade standards are issued by the Department after careful consideration of all data and views submitted, and the Department welcomes suggestions which might aid in improving the standards in future revisions. Comments may be submitted to, and copies of standards and grading manual obtained from:

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United States Standards for Grades of Canned Whole Kernel Corn

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| Authority: | Agricultural Marketing Act of 1946, Secs. 203, 205, 60 Stat. 1087, as amended, 1090, as amended (7 U.S.C. 1622, 1624). |

Note: Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act, or with applicable State laws and regulations.

§52.881 Product description.

Canned whole kernel (or whole grain) corn means the canned product properly prepared from the clean, sound, succulent kernels of sweet corn as defined in the definition and standard of product description for canned corn (21 CFR 155.130) issued pursuant to the Federal Food, Drug, and Cosmetic Act. The product is considered **Vacuum Pack** or **Vacuum Packed** when the liquid in the container is not more than 20 percent of the net weight and the container is closed under conditions creating a high vacuum.

§52.882 Color of canned whole kernel (or whole grain) corn.

- (a) White
- (b) Golden or Yellow.

§52.883 Grades of canned whole kernel (or whole grain) corn.

- (a) **U.S. Grade A or U.S. Fancy**, is the quality of canned whole kernel (or whole grain) corn that possesses similar varietal characteristics; that is tender; that possesses a good color; that is well cut; that is practically free from defects; that possesses a very good flavor; and that for those factors which are scored in accordance with the scoring system outlined in this subpart the total score is not less than 90 points: **Provided**, that the canned whole kernel (or whole grain) corn may possess a reasonably good color, a good flavor, and may be reasonably well cut, if the total score is not less than 90 points.
- (b) **U.S. Grade B or U.S. Extra Standard** is the quality of canned whole kernel corn (or whole grain) corn that possesses similar varietal characteristics; that is reasonably tender; that possesses a reasonably good color; that is reasonably well cut; that is reasonably free from defects; that possesses a good flavor; and that for those factors which are scored in accordance with the scoring system outlined in this subpart the total score is not less than 80 points: **Provided**, that the canned whole kernel (or whole grain) corn may possess a fairly good color, scoring not less than 7 points, and may be fairly well cut, if the total score is not less than 80 points.
- (c) **U.S. Grade C or U.S. Standard** is the quality of canned whole kernel (or whole grain) corn that possesses similar varietal characteristics; that is fairly tender; that possesses a fairly good color; that is fairly well cut; that is fairly free from defects; that possesses a fairly good flavor; and that scores not less than 70 points when scored in accordance with the scoring system outlined in this subpart.

- (d) **Substandard** is the quality of canned whole kernel (or whole grain) corn that fails to meet the requirements of U.S. Grade C or U.S. Standard and may or may not meet the minimum standards of quality for canned whole kernel (or whole grain) corn issued pursuant to the Federal Food, Drug, and Cosmetic Act.

§52.884 Recommended fill of container.

The recommended fill of container for canned whole kernel (or whole grain) corn is not incorporated in the grades of the finished product, since fill of container, as such, is not a factor of quality for the purpose of these grades. It is recommended that each container of canned whole kernel (or whole grain) corn be filled as full as practicable with the product.

§52.885 Recommended minimum drained weight.

The minimum drained weight recommendations of Table No. I of this section are not incorporated in the grades of the finished product, since drained weight, as such, is not a factor of quality for the purpose of these grades. The drained weight of whole kernel (or whole grain) corn is determined by emptying the contents of the container upon a United States Standard No. 8 circular sieve of proper diameter so as to distribute the product evenly, inclining the sieve slightly to facilitate drainage and allowing to drain for two minutes. The drained weight is the weight of the sieve and the whole kernel (or whole grain) corn less the weight of the dry sieve. A sieve 8 inches in diameter is used for the No. 2½ size can (401" x 411") and smaller sizes and a sieve 12 inches in diameter is used for containers larger than the No. 2½ size can.

TABLE NO. I

RECOMMENDED MINIMUM DRAINED WEIGHTS, IN OUNCES, OF WHOLE KERNEL
(OR WHOLE GRAIN) CORN (EXCEPT VACUUM PACK)

| Container size or designation | Grade A, tenderness and maturity minimum drained weight (ounces) | Grade B, C, and Substandard tenderness and maturity minimum drained weight (ounces) |
|-------------------------------|--|---|
| 8 ounce, tall | 5.25 | 5.50 |
| No. 1 (picnic) | 6.75 | 7.00 |
| No. 300 | 9.25 | 9.50 |
| No. 303 | 10.50 | 10.75 |
| No. 2 | 12.75 | 13.25 |
| No. 10 | 70.00 | 72.00 |

§52.886 Ascertaining the grade.

- (a) The grade of canned whole kernel (or whole grain) corn is ascertained by considering, in conjunction with the requirements of the respective grade, the respective ratings for the factors of color, cut, absence of defects, tenderness and maturity, and flavor.
- (b) The relative importance of each factor which is scored is expressed numerically on the scale of 100. The maximum number of points that may be given each such factor is:

| Factors | Points |
|-----------------------------------|-----------|
| Color | 10 |
| Cut | 10 |
| Absence of defects | 20 |
| Tenderness and maturity | 40 |
| Flavor | <u>20</u> |
| Total score | 100 |

§52.887 Ascertaining the rating for the factors which are scored.

The essential variations within each factor which is scored are so described that the value may be ascertained for each factor and expressed numerically. The numerical range within each factor which is scored is inclusive (for example, **18 to 20 points** means 18, 19, or 20 points).

§52.888 Color.

- (a) **"A" classification.** Canned whole kernel (or whole grain) corn that possesses a good color may be given a score of 9 or 10 points. **Good color** means that the kernels possess a practically uniform color typical of tender sweet corn and that the product is bright and is practically free from **off variety** kernels.
- (b) **"B" classification.** Canned whole kernel (or whole grain) corn that possesses a reasonably good color may be given a score of 8 points. **Reasonably good color** means that the kernels possess a reasonably uniform color typical of reasonably tender sweet corn and that the product may lack brightness but not to the extent that the appearance is materially affected and is reasonably free from **off-variety** kernels.

- (c) **"C" classification.** Canned whole kernel (or whole grain) corn that possesses a fairly good color may be given a score of 6 or 7 points. Canned whole kernel (or whole grain) corn that scores 7 points in this classification shall not be graded above U.S. Grade B or U.S. Extra Standard and that scores 6 points in this classification shall not be graded above U.S. Grade C or U.S. Standard, regardless of the total score for the product (this is a partial limiting rule). **Fairly good color** means that the kernels possess a fairly uniform color typical of fairly tender sweet corn and that the product may be dull but not to the extent that the appearance is seriously affected and is fairly free from **off-variety** kernels.
- (d) **"SStd" classification.** Canned whole kernel (or whole grain) corn that fails to meet the requirements of paragraph (c) of this section may be given a score of 0 to 5 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

§52.889 Cut.

- (a) **General.** The factor of cut refers to the degree of smoothness of the cut surface of the kernels, uniformity and depth of cut, and to the degree of freedom from adhering cob tissue.
- (b) **"A" classification.** Canned whole kernel (or whole grain) corn which has been well cut may be given a score of 9 or 10 points. **Well cut** means that the appearance of the product is not more than slightly affected by the presence of ragged cut kernels, torn kernels, irregular cut kernels, and kernels with attached cob tissue.
- (c) **"B" classification.** Canned whole kernel (or whole grain) corn in which the kernels are reasonably well cut may be given a score of 8 points. **Reasonably well cut** means that the appearance of the product is not materially affected by the presence of ragged cut kernels, torn kernels, irregular cut kernels and kernels with attached cob tissue.
- (d) **"C" classification.** Canned whole kernel (or whole grain) corn in which the kernels are fairly well cut may be given a score of 6 or 7 points. Canned whole kernel (or whole grain) corn that falls into this classification shall not be graded above U.S. Grade B or U.S. Extra Standard, regardless of the total score for the product (this is a limiting rule). **Fairly well cut** means that the appearance of the product is not seriously affected by the presence of ragged cut kernels, torn kernels, irregular cut kernels, and kernels with attached cob tissue.

- (e) **"SStd" classification.** Canned whole kernel (or whole grain) corn that fails to meet the requirements of paragraph (d) of this section may be given a score of 0 to 5 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

§52.890 Absence of defects.

- (a) **General.** The factor of absence of defects refers to the degree of freedom from pieces of cob, husk, silk, or other harmless extraneous vegetable matter, from pulled kernels, ragged kernels, crushed kernels, loose skins, and from damaged or seriously damaged kernels.
- (1) **Damaged kernel** means any kernel affected by insect injury, or damaged by discoloration, pathological injury, or by other means to the extent that the appearance or eating quality is materially affected.
- (2) **Seriously damaged kernel** means damaged to such an extent that the appearance or eating quality is seriously affected.
- (b) **"A" classification.** Canned whole kernel (or whole grain) corn that is practically free from defects may be given a score of 18 to 20 points. **Practically free from defect** means that pieces of cob, husk, silk, or other harmless extraneous vegetable matter, pulled kernels, ragged kernels, crushed kernels, loose skins, and damaged or seriously damaged kernels may be present that do not more than slightly affect the appearance or eating quality of the product.
- (c) **"B" classification.** If the canned whole kernel (or whole grain) corn is reasonably free from defects a score of 16 or 17 points may be given. Canned whole kernel (or whole grain) corn that falls into this classification shall not be graded above U.S. Grade B or U.S. Extra Standard, regardless of the total score for the product (this is a limiting rule). **Reasonably free from defects** means that pieces of cob, husk, silk, or other harmless extraneous vegetable matter, pulled kernels, ragged kernels, crushed kernels, loose skins, and damaged or seriously damaged kernels may be present that do not materially affect the appearance or eating quality of the product.
- (d) **"C" classification.** Canned whole kernel (or whole grain) corn that is fairly free from defects may be given a score of 14 or 15 points. Canned whole kernel (or whole grain) corn that falls into this classification shall not be graded above U.S. Grade C or U.S. Standard, regardless of the total score for the product (this is a limiting rule). **Fairly free from defects** means that:

- (1) For each 14 ounces of drained weight there may be present:
 - (i) Not more than 1 cubic centimeter of pieces of cob; ¹
 - (ii) Not more than 1 square inch (1" x 1") of husk; ¹ and
- (2) For each 2 ounces of drained weight there may be present:
 - (i) Not more than 1 brown or black discolored kernel or discolored piece of kernel; ¹ and
- (3) For each 1 ounce of drained weight there may be present:
 - (i) Not more than 7 inches of silk; ¹ **Provided**, that pieces of cob, silk, or other harmless extraneous vegetable matter, pulled kernels, ragged kernels, crushed kernels, loose skins, and damaged or seriously damaged kernels do not seriously affect the appearance or eating quality of the product.
- (e) **"SStd" classification.** Canned whole kernel (or whole grain) corn that fails to meet the requirements of paragraph (d) of this section may be given a score of 0 to 13 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule), and may also be graded **Below Standard in Quality** for the applicable reasons:
 - (1) Excessive discolored kernels.
 - (2) Excessive cob.
 - (3) Excessive husk.
 - (4) Excessive silk.

§52.891 Tenderness and maturity.

- (a) **"A" classification.** Canned whole kernel (or whole grain) corn that is tender may be given a score of 36 to 40 points. **Tender** means that the kernels are in the milk or early cream stage of maturity and have a tender texture.

¹ Determined as outlined in the Standards of Quality for Canned Corn (21 CFR 155.130) promulgated under the Federal Food, Drug, and Cosmetic Act.

- (b) **"B" classification.** If the canned whole kernel (or whole grain) corn is reasonably tender a score of 32 to 35 points may be given. Canned whole kernel (or whole grain) corn that falls into this classification shall not be graded above U.S. Grade B or U.S. Extra Standard, regardless of the total score for the product (this is a limiting rule). **Reasonably tender** means that the kernels are in the cream stage of maturity and have a reasonably tender texture.
- (c) **"C" classification.** Canned whole kernel (or whole grain) corn that is fairly tender may be given a score of 30 or 31 points. Canned whole kernel (or whole grain) corn that falls into this classification shall not be graded above U.S. Grade C or U.S. Standard, regardless of the total score for the product (this is a limiting rule). **Fairly tender** means that the kernels are in the early dough or dough stage and may be firm but not hard or tough. The weight of the alcohol insoluble solids ¹ shall not exceed 27 percent of the drained weight.
- (d) **"SStd" classification.** Canned whole kernel (or whole grain) corn that fails to meet the requirements of paragraph (c) of this section maybe given a score of 0 to 29 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule), and may also be graded **Below Standard in Quality**.
- (e) **"SStd" classification.** Canned whole kernel (or whole grain) corn that fails to meet the requirements of paragraph (c) of this section may be given Substandard, regardless of the total score for the product (this is a limiting rule), and may also be graded **Below Standard in Quality**.

§52.892 Flavor.

- (a) **General.** The factor of flavor refers to the palatability of the product. The natural flavor of the sweet corn and the effects of added sugar (sucrose) and salt are considered in evaluating this factor.
- (b) **"A" classification.** Canned whole kernel (or whole grain) corn that possesses a very good flavor may be given a score of 18 to 20 points. **Very good flavor** means that the product including added seasoning ingredients has a very good characteristic flavor and odor typical of tender canned sweet corn.

¹ Determined as outlined in the Standards of Quality for Canned Corn (21 CFR 155.130) promulgated under the Federal Food, Drug, and Cosmetic Act.

- (c) **"B" classification.** If the canned whole kernel (or whole grain) corn possesses a good flavor a score of 16 or 17 points may be given. **Good flavor** means that the product including added seasoning ingredients has a good characteristic flavor and odor typical of reasonably tender canned sweet corn.
- (d) **"C" classification.** Canned whole kernel (or whole grain) corn that possesses a fairly good flavor may be given a score of 14 or 15 points. Canned whole kernel (or whole grain) corn that falls into this classification shall not be graded above U.S. Grade C or U.S. Standard, regardless of the total score for the product (this is a limiting rule). **Fairly good flavor** means that the product may be lacking in good flavor and odor but is free from objectionable flavors and objectionable odors of any kind.
- (e) **"SStd" classification.** Canned whole kernel (or whole grain) corn that fails to meet the requirements of paragraph (d) of this section may be given a score of 0 to 13 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

§52.893 Ascertaining the grade of a lot.

The grade of a lot of canned whole kernel (or whole grain) corn covered by these standards is determined by the procedures set forth in the **Regulations Governing Inspection and Certification of Processed Fruits and Vegetables, Processed Products Thereof, and Certain Other Processed Food Products** (7 CFR 52.1 through 52.83, 22 F. R. 3535).

§52.894 Score sheet for canned whole kernel (or whole grain) corn and canned whole kernel (or whole grain) vacuum pack corn.

| Number, size and kind of container | | | |
|--|-----------|--------------|-----------------|
| Container marks or identification | | | |
| Label | | | |
| Net Weight "ounces" | | | |
| Vacuum "inches" | | | |
| Drained weight "ounces" | | | |
| Color | | | |
| Factors | | Score points | |
| Color | 10 | "A" | 9-10 |
| | | "B" | 8 |
| | | "C" | 6-7 <u>1/</u> |
| | | "SStd" | 0-5 <u>2/</u> |
| Cut | 10 | "A" | 9-10 |
| | | "B" | 8 |
| | | "C" | 6-7 <u>2/</u> |
| | | "SStd" | 0-5 <u>2/</u> |
| Absence of defects | 20 | "A" | 18-20 |
| | | "B" | 16-17 <u>2/</u> |
| | | "C" | 14-15 <u>2/</u> |
| | | "SStd" | 0-13 <u>2/</u> |
| Tenderness and maturity | 40 | "A" | 36-40 |
| | | "B" | 32-35 <u>2/</u> |
| | | "C" | 30-31 <u>2/</u> |
| | | "SStd" | 0-29 <u>2/</u> |
| Flavor | <u>20</u> | "A" | 18-20 |
| | | "B" | 16-17 |
| | | "C" | 14-15 <u>2/</u> |
| | | "SStd" | 0-13 <u>2/</u> |
| Total score | 100 | | |
| U.S. Grade | | | |

1/ Indicates partial limiting rule.

2/ Indicates limiting rule.

Recodified in the Federal Register of December 9, 1953 (18 F. R. 7965) Section 52.893 amended May 22, 1957 (22 F.R. 3535)

